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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,599	12/22/2000	Glynn Russell Ashdown	P98,1245	4501

7590 10/23/2002

SCHIFF HARDIN & WAITE
Patent Department
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EXAMINER

NGUYEN, DILINH P

ART UNIT PAPER NUMBER

2814

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/747,599

Applicant(s)

ASHDOWN, GLYNN RUSSELL

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 13-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 13-14 is/are rejected.
- 7) ☒ Claim(s) 9 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim 13 is a semiconductor device claim; therefore, claim 13 is examining with the previously elected apparatus claims.

Claim Objections

Claim 13 recites the limitation "said extension member surface". There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

Response to Amendment

The amendment filed 7/24/02 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: said heat dissipating element being disposed in a position to receive air flow on both sides.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The phrase: "...said heat dissipating element being disposed in a position to receive air flow on both sides..." is new subject matter which was not described in the specification.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikushima (U.S. Pat. 5,912,592) in view of Mori et al. (U.S. Pat. 5,659,199).

- Regarding claim 1, Kikushima discloses a semiconductor device (figs. 1-2) comprising:

a substrate (column 6, line 51) having a mounting pad provided with an adhesive material in a mounting region (column 5, lines 66 et seq.);

a mounting plate 71 formed of thermally conductive material (column 6, lines 40-45), wherein the mounting plate having a first major surface being positioned on the mounting pad of the substrate;

a radiating lead 11 thermally connected to the mounting plate and being spaced from the substrate (fig. 2, column 6, lines 35 et seq.);

an IC chip 60 (fig. 2, lumn 5, lines 66) mounted on the lead frame at a second major surface opposite the first major surface.

- Regarding claim 13, Kikushima discloses a semiconductor device (figs. 1-2) comprising:
 - a mounting plate 71 of a generally planer configuration;
 - an extension member extending generally perpendicular to the mounting plate;
 - a radiating lead 11 thermally connected to the extension member, the heat dissipation element and a extension member surface and the mounting plate being thermally conductive and the heat dissipating element being spaced from the heat generating component.

Kikushima fails to disclose a mounting plate comprising a plurality of adhesive flow openings therethrough.

Mori et al. disclose mounting plate 11 (figs. 1-2, column 4, lines 15-25 and 52-58) comprising a plurality of adhesive flow openings therethrough to better secure the chip to the mounting plate. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kikushima to better secure the chip to the mounting plate, as shown by Mori et al.

- Regarding claims 2-3, Mori et al. disclose a paste material 6 or solder (fig. 5, column 1, lines 42-43). It would have been obvious that the adhesive material of Mori et al. is thermal adhesive.
- Regarding claim 4, Kikushima discloses the J- shape radiating lead 11 (fig. 1, column 7, lines 9-10) comprising an extension generally perpendicular to the mounting plate; and a portion generally parallel to the mounting plate and spaced therefrom. Kikushima discloses the claimed invention except for not specifically

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point out the extension is positioned in a direction opposite to the first major surface. It would have been an obvious and a design alternative.

- Regarding claim 5, Kikushima discloses the portion overlies the mounting plate (fig. 1)
- Regarding claim 6, Kikushima discloses the portion includes lateral extension (fig. 1).
- Regarding claims 7-8, Kikushima discloses the mounting plate and the extension and the portion form a U shape (fig. 1). It would have been an obvious matter of design choice wherein the mounting plate and the extension and the portion form a Z shape.

3. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kikushima (U.S. Pat. 5,912,592) in view of Mori et al. (U.S. Pat. 5,659,199) and further in view of Rife et al. (U.S. Pat. 5,825,622).

Kikushima and Mori et al. disclose the claimed invention except for a heat dissipating fin.

Rife et al. disclose a heat dissipating fin 30 (cover fig., column 4, line 10) to improve the heat dissipating for the semiconductor package. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Kikushima and Mori et al. as a design alternative and to improve the heat dissipating for the semiconductor package.

Allowable Subject Matter

Claims 9 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims Allowed

Claims 16-17 are allowed.

The following is an examiner's statement of reasons for allowance:

Kikushima and Mori et al. fail to disclose a mounting plate having a channel or a connecting edge.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 7/24/02 have been fully considered but they are not persuasive.

The applicant argues that none of the cited references provide a heat sink. None of the references provide a mounting of a heat sink by placing a plate shaped portion between the electronic component and the mounting board.

The examiner respectfully disagrees.

Kikushima discloses a mounting plate 71 formed of thermally conductive material (column 6, lines 40-45), wherein the mounting plate having a first major surface being positioned on the mounting pad of the substrate;

a radiating lead 11 thermally connected to the mounting plate and being spaced from the substrate (fig. 2, column 6, lines 35 et seq.), wherein the wide heat radiating lead 11 provides in order to improve the heat radiation effect (column 6, lines 62-64); therefore, the radiating lead 11 functions as a heat sink for the semiconductor package device.

The applicant argues that none of the references have a finned heat sink. The argument has been considered but is moot in view of the new ground(s) of rejection.

Therefore, see the new rejection above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (703) 305-6983. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, OLIK CHAUDHURI can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

DLN

October 15, 2002


G. M. Chandler
Supervisory Patent Examiner
Technology Center 4000